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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/502,085

04/12/2005

Zi-Hua Jiang

JIANG4A

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EXAMINER

NAVARRO, ALBERT MARK

ART UNIT

PAPER NUMBER

1645

MAIL DATE

DELIVERY MODE

05/12/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/502,085	Applicant(s) JIANG ET AL.	
	Examiner Mark Navarro	Art Unit 1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56,58-68,72-81 and 100-107 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-56,58-68,72-81 and 100-107 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicants amendment filed September 10, 2008 has been received and entered. Claims 57, 69-71, 82-99 are cancelled. Accordingly, claims 1-56, 58-68, 72-81 and 100-107 are pending in the instant application.

Claim Objections

1. The objection of claim 11 for reference to a figures or table is withdrawn in view of Applicants amendment.

Claim Rejections - 35 USC § 112

2. The rejection of claims 1 and 66 under 35 U.S.C. 112, second paragraph, as being vague and indefinite in the recitation of "analogue thereof" is withdrawn.
3. The rejection of claims 4-5, and 13-14 under 35 U.S.C. 112, second paragraph, as vague and indefinite in the recitation of "strongly/highly lipophilic" is withdrawn.
4. The rejection of claim 66 under 35 U.S.C. 112, second paragraph, as vague and indefinite in the recitation of "short/long internucleoside linkages" is withdrawn.

Claim Rejections - 35 USC § 102

5. The rejection of claims 1-9, 11-14, 17-33, 35, 55-56, 59-63, 65-68, 72-81 and 100

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under 35 U.S.C. 102(b) as being anticipated by Polson et al is withdrawn in view of Applicants amendment.

6. The rejection of claims 1-9, 11-33, 35, 55-63, 65-68, 72-81, and 100 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Agrawal is withdrawn in view of Applicants amendment.

Claim Rejections - 35 USC § 103

7. The rejection of claims 1-9, 11-33, 35, 55-68, 72-81, and 100 under 35 U.S.C. 103(a) as being unpatentable over Kreig et al and Davis et al in view of Shea et al is withdrawn in view of Applicants amendment.

The following new grounds of rejection are applied to the claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-56, 58-68, 72-81 and 100-107 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kreig et al and Davis et al and Shea et al in view of Sonehara et al.

The claims are directed to a method of stimulating the immune system of a subject which comprises administering to the subject an immunologically effective amount of an isolated immunostimulatory molecule which comprises at least one oligonucleotide strand which comprises at least one oligonucleotide comprising a plurality of nucleotides, each nucleotide comprising a nucleobase, and thereby also comprising at least one CxG dinucleotide unit or analogue thereof, in which there are no more than seven nucleobases in each oligonucleotide strand, wherein in said analogue, (1) cytosine is replaced with a cytosine analogue which is a pyrimidine other than thymine or uracil, and/or (2) guanine is replaced with a guanine analogue which is a purine other than adenine and at least one covalently incorporated lipophilic group.

Kreig et al (WO 98/18810) and Davis (WO 98/40100) teach immunostimulatory activity of oligos comprising CpG dinucleotides and Kreig et al teach

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that cell uptake is necessary for immune stimulation. (See top of column 2 on page 548).

Neither Krieg et al nor Davis et al teach of a covalently incorporated lipophilic group.

Sonehara et al (Reference BV of IDS) teach hexamer oligos comprising CpG dinucleotides induce interferon production and are immunostimulatory (See discussion) when added to cells within liposomes. The liposomes were used provide for efficient uptake of the oligos.

Shea et al (Nucleic Acids Research Vol. 18, No. 13, pp 3777-3783, 1990) teach oligo-lipid conjugates and the use of such conjugates to increase cellular delivery of the oligonucleotides.

As Krieg et al teach that efficient cellular uptake is necessary for oligos comprising CpG dinucleotides and Sonehara et al teach that hexamer oligos comprising CpG dinucleotides induce interferon production and are immunostimulatory when combined with a system providing for efficient uptake and Shea et al teach that lipid conjugation is another means of enhancing the cellular uptake of therapeutically useful oligos, it would have been prima facie obvious to one of ordinary skill in the art to substitute lipid conjugation to the hexamers of Sonehara et al for the liposomes in the composition of Shea or Krieg or Davis.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Navarro whose telephone number is (571) 272-0861.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Mondesi can be reached on (571) 272-0956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Navarro/
Primary Examiner, Art Unit 1645
May 10, 2009